



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO. 2H
-----------------	-------------	----------------------	------------------------

09/21/2000 09/21/2000

100270321

620247
TRACEL 16011
MID. BOX 0000
SALT LAKE CITY UT 84100

EXAMINER

ART UNIT	PAPER NUMBER 3
----------	----------------

1700
DATE MAILED:

09/21/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/711,324

Applicant(s)

KO ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- 18) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 19 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 19 and 38, "desired etch selectivity" and "desired etch rate" are vague and indefinite because it is a relative term with no basis for comparison. Thus, the metes and bounds are unclear.

Claim Rejections - 35 USC § 10

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding et al. (US 5,814,563) in view of Bosch et al. (US 5,626,716).

Ding teaches that a dry etchant, for etching dielectric material including any silicon oxide and silicon nitride, may comprise a component with the general formula $C_2H_xF_y$, where x is an integer from 3-5, y is an integer from 1 to 3 and $x + y = 6$.

Unlike the claimed invention, Ding does not explicitly state that the dry etchant may be formulated to etch doped silicon dioxide with selectivity over (or at faster rate in instant claim 20) at least undoped silicon dioxide. In plasma etching of semiconductors, Bosch teaches that it is known that in dry etching process, the doped silicon oxide (such as the addition of the boron and phosphorous to the oxides) is etched at a faster rate than undoped silicon oxide (col. 2, lines 9-12). Bosch is not particular about the etchant to be used in the dry etching process, therefore, any conventional etchant (e.g., fluorohydrocarbon) will be formulated and inherently contain the same properties. In addition, Bosch also cites an example of fluorohydrocarbon (CHF_3). Because both CHF_3 and any $\text{C}_2\text{H}_x\text{F}_y$ are from same class of compounds, they are all fluorohydrocarbon gas, therefore, one skilled in the art at the time of the invention would have found it obvious to modify Ding by using the same principles of Bosch to formulate the etchant of Ding in order to provide required etching selectivity ratios.

As to claim 2 and 21, Bosch teaches doped silicon dioxide with selectivity over silicon nitride (col.2, lines 37-39). For the same discussion above, the etchant of Ding may be formulated to do so.

As to claims 3-7 and claims 22-26, Ding teaches these features (see col. 6, lines 1-14).

As to claims 8, 13, 27 and 32, Ding teaches using CH_2F_2 and CH_3F (col. 6, lines 1-14).

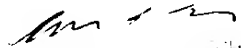
As to claims 9, 11, 16, 28, 30 and 35, Ding teaches using CF_4 and CHF_3 (col. 6, lines 1-14).

Art Unit: 1765

Claims 10, 12, 14, 15, 17, 18, 19, 29, 31, 33, 34,36, 37, and 38 differ from the prior art by specifying various compositions or concentrations. However, the same materials are used and the process is alike. It is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify Bosch and Ding by using various compositions and different concentrations because same were known to be result-effective variables, and routine experimentation would have been expected to optimize them.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is 703-3050222. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-3082934.

K-C C
March 17, 2001


Examiner: K. Chen
Date: 3/17/01